

xii. Siberian Snake Power Supplies

There are a total of 24 snake power supplies in both rings. All of the snake power supplies are located in the alcoves. Each power supply is rated at a maximum of 15Volts at 440Amps DC. The snake power supplies are current regulated switchmode power supplies with a DCCT current sensing element. The switchmode power section is a commercially available voltage regulated power supply, which is inside a BNL designed current regulator.

The snake power supply receives an analog setpoint from an external Fiber optic interface card. This fiber optic interface card receives the setpoint over fiber and converts it to an analog current setpoint utilizing a 12 bit D/A.

The snake power supply must also interface with the quench protection system. There are connections made to the Quench Protection Assembly (QPA) and the Quench Detector. The power supply sends the power supply status to the QPA and any QPA faults are sent back to the power supply as well. The power supply output current is sent to the Quench Detector. Figure 2-22 is a block diagram of the snake power supply.

Two snake power supplies are required to power one snake magnet. Each power supply powers 2 coils that are in series in each magnet. The Inductance of each coil is approximately 5.1H so the total inductance one p.s. sees is approximately 10.2H.

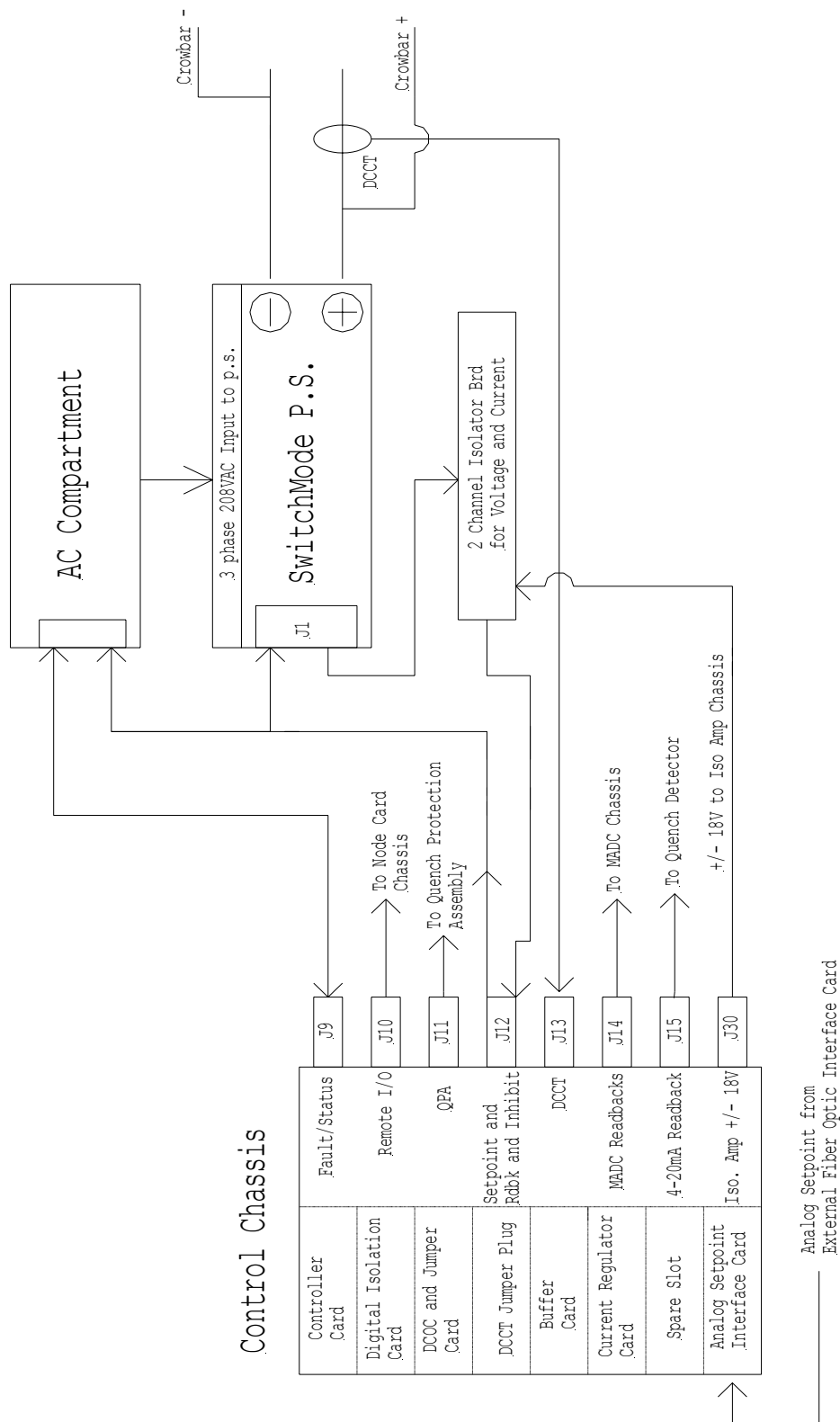


Fig. 2-22 Snake Power Supply Block Diagram